

*IN THE CLAIMS*

Please amend claim 11 as indicated below. All pending claims are reproduced below.

- 1           1. (Original)A computer-implemented method of automated software  
2      specification, comprising:  
3                 storing specification modules, with their relations displayed on a computer  
4      screen in terms of their specification morphisms, where the specification morphisms  
5      translate the specification signatures while preserving the logical structure of the  
6      specification;  
7                 determining and displaying, in response to a user command, multiple  
8      specification diagrams, each of which captures the relation between two or more  
9      specification modules, along with its specification morphisms;  
10                building and displaying, in response to a user command, a diagram of the  
11     specification diagrams, the diagram of specification diagrams retaining the diagram  
12     morphisms of the specification diagrams; and  
13                computing the colimits of the hereditary diagram of diagrams to compose  
14     large software modules while preserving the decomposition of the involved components.
- 1           2. (Original)A computer-implemented method for determining a colimit of a  
2     hereditary diagram, comprising:  
3                extracting the shape colimit of the hereditary diagram stored in a  
4     memory, the hereditary diagram including a plurality of diagrams;  
5                bringing each of the plurality of diagrams in the hereditary diagram to  
6     the shape of the shape colimit to yield a plurality of extended diagrams in the memory;  
7     and  
8                taking the colimit of the extended diagrams.

1           3. (Original)The method of claim 2, further comprising: receiving from the user  
2 an indication to find the colimit of the hereditary diagram.

1           4. (Original)The method of claim 2, wherein extracting the shape colimit of the  
2 hereditary diagram includes:  
3                 determining the shape of each of the plurality of diagrams to yield a shape  
4                 graph in the memory; and  
5                 automatically calculating a colimit of the shape diagram.

1           5. (Original)The method of claim 2, further comprising: displaying a  
2 representation of the colimit on a display device.

1           6. (Original)The method of claim 5, wherein the representation o the colimit is  
2 the name of the colimit.

1           7. (Original)The method of claim 5, wherein the representation of the colimit is a  
2 picture of the diagram of the colimit.

1           8. (Original)The method of claim 2, wherein the hereditary diagram includes  
2 types of the diagram elements.

1           9. (Original)The method of claim 2, wherein the hereditary diagram includes  
2 morphisms between the diagram elements.

1           10. (Original)The method of claim 2, wherein the hereditary diagram is displayed  
2 with indicators on its arcs indicating what morphism is associated with the arcs.

1           11. (Original)The method of claim 2, wherein the colimit of the hereditary  
2 diagram is displayed with indicators on its arcs indicating that ~~that~~ arcs constitute a  
3 cocone colimit.

1           12. A computer-implemented system of automated software specification, comprising:  
2                   specification modules stored as separate entities, with their relations displayed on  
3 a computer screen in terms of their specification morphisms, where the specification morphisms  
4 translate the specification signatures while preserving the logical structure of the specification;  
5                   a portion that determines and displays, in response to a user command, multiple  
6 specification diagrams, each of which captures the relation between two or more specification  
7 modules, along with its specification morphisms;  
8                   a portion that builds and displays, in response to a user command, a diagram of  
9 the specification diagrams, the diagram of specification diagrams retaining the diagram  
10 morphisms of the specification diagrams; and  
11                   a portion that computes the colimits of the hereditary diagram of diagrams to  
12 compose large software modules while preserving the decomposition of the involved  
13 components.